DoD Quality Assurance Laboratory - Program Review

NADAP Conference

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Millington, Tenn.

10-14 May 2004

DoD Drug Detection Quality Assurance Laboratory

FY 2003: 23,000 proficiency samples sent

Proficiency Testing

Military Open and Blind Proficiency Program

6 military drug testing labs participating

LGC – UK drug testing lab

Civilian Blind Proficiency Program

4 Federal agencies participating

Compounds Monitored

Amphetamine/Methamphetamine
MDA/MDMA/MDEA
Morphine/Codeine/6-acetylmorphine
Barbiturates – Seco, Pheno, Butal
Cocaine Metabolite - BZE
Cannabinoids – THCCOOH
Phencyclidine
LSD – 2-oxo, 3-hydroxy LSD, LSD
Special Testing – Benzos, Psilocin
GHB, Ketamine, synthetic opiates

AFIP Administrative and Technical Responsibilities

- Administrative and technical oversight for the Blind and Open proficiency programs
- Administrative oversight of the Greystone inspection contract
- Technical arm for the ODASD-CN
- Drug laboratory certifications
  - Operating certification
  - Analyte certification
- Conduct prevalence studies
  - Benzodiazepines, 6AM, Oxycodone, Ketamine

- Validate new testing methodologies
  - Screening instrumentation and reagents
  - LC/MS
- Support drug labs
  - Special testing capabilities
    - » Drugs the labs don’t test for
  - Litigation support
    - » Court Martial, Administrative boards
- DoD QA lab participates in the CAP proficiency program
  - Samples sent quarterly
  - All drugs except LSD (OH-LSD)
  - Different cutoffs than DoD
    - » Morphine and codeine

Blind Proficiency Program

- Urine used is certified negative by immunoassay and GC/MS
  - Purchased commercially and donated by AFIP staff
- All drugs spiked at 160% DoD cutoff
  - THCCOOH and OH-LSD spiked at 200% of cutoff
- All sample processing completed at the AFIP
  - Chain of custody initiated at submitting unit
- Submission of Blind samples better, but not 100%

Blind Proficiency Program (Cont.)

- Quantitative results dependent on time from sample preparation to testing
  - THCCOOH and OH-LSD most affected
  - Low quantitation may not be the fault of the lab
- OH-LSD and 6-AM will be added in July 04
  - JAX and San Diego certified to confirm for OH-LSD in March 04
  - Due to an increase in the amount of Opium being produced in Afghanistan, and to get a baseline prevalence of Heroin use, the AFIP is proposing 100% testing using both the current Opiate reagent as well as the new 6-AM reagent (6 months)

Open Proficiency Program

- Same certified negative urine as Blind program
- 15-20 urine samples sent monthly
- Drug concentrations range from 40% to 100 times the DoD cutoff
- Samples sent directly to the lab
  - Better control of transit time
  - Quantitative result should be more consistent and representative of lab performance than Blind sample results
- Major purpose is accurate quantitative results
- Results compared to the other DoD labs and to theoretical
- Tests the ability to quantitate in the presence of interfering compounds

Greystone Inspections

- DoD labs inspected three times per year
- Greystone inspectors are ABFT certified
- AFIP member or delegate always a part of the inspection team
- Service program manager and attorney are a part of the inspection team
- Final inspection report sent to the AFIP for review and distribution
- One inspection a year is a DoD certification inspection
  - Recommendation for continued certification sent to DoD
  - DoD sends labs authorization certification

Research

- **Drug prevalence studies**
  - Benzodiazepines – Common Rx
    - incidence 0.3% in active duty members
  - 6-AM – Specific for Heroin use, no MRO review, 500K/yr cost reduction, use rates in military very low
    - Screening reagent added to DoD panel May/June 04
  - Oxycodone – highly abused, orally active, easy to obtain
    - incidence rate 0.2% Navy, 0.55% Army
    - No plan for addition to the DoD panel of drugs
  - Ketamine – Not widely abused in military
    - Most common in bases bordering Mexico

Research(Cont.)

- **Method Development**
  - 2-oxo, 3-hydroxy-LSD LC/MS method and parameters
    - » Confirmation assay in place at the AFIP, JAX and San Diego
  - Substituted tryptamines – Foxy methoxy, AMT, DMT
  - Piperazines – TFMPP, BZP, CPP
  - LSA – Lysergic acid amide - Morning glory, Hawaiian woodrose seeds
  - Salvia Divinorum – Salvinorin A
  - Absinthe - Thujone

Commercial Product Testing

- THC content in hemp products
  - Ninth circuit Court of Appeals ruled DEA did not have the authority to regulate THC in food products
  - Hemp oils, snack bars, Jones Juice “Dave”
    - Hemp oils 2-6 ug/g
  - Stoners, Buddafinga candy bars
    - 24 and 29 mg THC/bar respectively
- Coca Teas
  - Mate de Coca, Cocalyptuss (Zurit and Delisse)
    - 2-7 mg cocaine per bag
    - Preliminary results indicate a maximum urinary BZE concentration of 4100 ng/ml after one cup of tea
    - BZE concentration stayed above the DoD cutoff for two days

Future Initiatives

- Adulterant testing
  - AFIP could act as the reference lab for all services
    - What tests to run
      - pH – normal range 4.5 –8.0, acids <3 or bases >11
      - Creatinine – less than 20 mg/dL considered dilute
      - Specific gravity – less than 1.003 considered dilute
      - Nitrites - KLEAR
      - Oxidants – Bleach, STEALTH, Urine Luck
      - Gluteraldehyde
      - Chromate – Insta Clean, ADD-IT-IVE, LUCKY LAB
    - Consequences
- Questions ?